

REMARKS

Claims 1, 2, 6, 7, and 9-12 are in this application. Claims 3-5 and 8 have been canceled.

Claim 1 has been amended to incorporate the subject matter of claim 3. Support for the addition of the molar ratio of alcohol to fatty acid glycerides catalyst is found on page 5, lines 6 to 7, of the specification.

Claims 1, 2, 6, 7, and 9-12 are rejected under 35 USC 103(a) as being unpatentable over Yoo, (US 2005/0080280 corresponds to WO 03/066567) in view of Hayafuji et al. in view of Yean et al. (Applied Organometallic Chemistry, 2000, vol. 14) and further in view of Ciaudelli (US Patent 4,567,037). This is respectfully traversed.

Applicants respectfully disagree with the Examiner's statement that each of the references was discussed individually and not in combination. In the present invention esterification and transesterification occur simultaneously in one step. This differs from Yoo as the process described in Yoo is only applicable for transesterification of fatty acid glycerides. Paragraph [0018] of Yoo describes a process for transesterification of glycerides. Paragraph [0044] also only describes transesterification. It does not describe nor suggest simultaneous esterification and transesterification. Furthermore, the catalyst used in Yoo is an alkali catalyst. See for example, paragraph [0015] that describes use of a metal hydroxide catalyst and paragraph [0040] that describes use of an alkali catalyst.

As explained in the previous response, the process described in Hayafugi et al. differs from the claimed process in that the claimed process does not require any pretreatment. In the claimed process the fatty acids and the triglycerides can be converted into fatty acid alkyl esters without pretreatment. The catalyst in Hayafugi is alkaline and therefore, neutralization is required and a one-step process esterification and transesterification is not possible.

Ciaudelli describes the preparation of fatty acid diesters used in cosmetics. The process described in an esterification reaction where the water is removed in a Dean-Strak trap. As stated above, in the claimed process, water formed in the reaction does not affect the overall conversion of triglycerides into the fatty acid alkyl esters.

Yean is a scientific paper that has a narrow focus on the potential of diorganotin compounds to function as neutral and non-corrosive catalysts in the methanolysis of tripalmitin to methyl palmitate. There is no suggestion in this paper that tin catalysts can be used where the starting material is not pure or is a mixture of materials. Other differences between the invention claimed in this application and Yean were discussed in the prior response.

There is no combination of the references that discloses, teaches or suggests a process for preparing fatty acid alkyl esters suitable for use as biodiesel from a starting material of fatty acid glycerides selected from the group consisting of vegetable oils, edible or non-edible oils containing high free fatty acid, animal oils, fat and, acid and a mixture thereof wherein


esterification of the fatty acid and transesterification of simultaneously, wherein the process comprises the steps of:

- a) reacting fatty acid glycerides and fatty acid present in it with an alcohol having 1-4 carbon atoms at a temperature ranging between 70-300°C, pressure in a range of 1-30 bar, where in the molar ratio of alcohol to fatty acid glycerides ranges from 3:1 to 30:1, in presence of a organometallic catalytic compound of tin wherein the concentration of catalyst is in a range of 0.01 to 3 weight percent of the fatty acid glycerides;
- b) obtaining fatty acid alkyl esters with glycerol;
- c) separating the glycerol from the fatty acid alkyl ester as immiscible phase by decantation;
- d) recovering and recycling the alcohol that is in excess by evaporation or distillation;
- e) purifying the fatty acid alkyl esters by washing with water, and
- f) purifying the washed ester obtained in step e) by distillation or treating with a basic adsorbent selected from the group consisting of bauxite, clay, alumina, silica-alumina or a combination thereof.

Since this has not been shown, suggest, taught, nor would one of ordinary skill in the art be motivated to obtain this process, it is respectfully requested that the rejection be withdrawn.

It is submitted that the application is in condition for allowance and favorable consideration is respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Janet I. Cord', is written over a horizontal line.

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